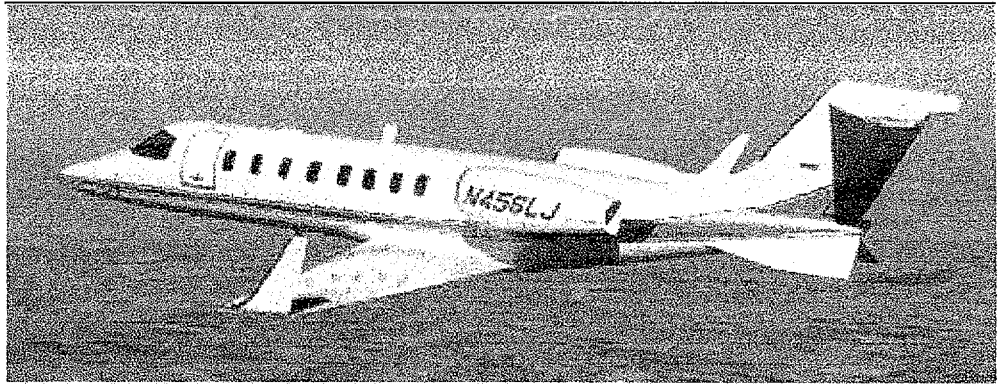


4



WINSLOW-LINDBERGH REGIONAL AIRPORT Winslow, Arizona

AIRPORT MASTER PLAN - 1998 AIRPORT FACILITY REQUIREMENTS

GENERAL REQUIREMENTS AND CRITERIA

Any growth in local aviation related activities or change in existing or anticipated use of an airport facility requires a corresponding program of airport development and implementation. This is necessary in order to assure that the facility remains able to effectively accommodate its demand and to effectively serve its market.

In order to provide for the demands on the Winslow-Lindbergh Regional Airport, a schedule of facility improvements has been developed, based on an inventory of the existing airport facilities and the development of forecast aircraft activity through the twenty-year planning period.

The facility requirements were developed accepting the following criteria:

- ▶ The dimensional standards and design criteria for all improvements proposed within the planning period shall be as detailed in FAA Advisory Circular AC 150/5300-13, Airport Design. A printout from the FAA's Airport Design program is included at the end of this section. This includes all applicable dimensional criteria for the existing and ultimate airport configurations.
- ▶ The existing critical aircraft is a mix of ARC B-I, B-II, and C-I, C-II and C-III business jets, as detailed in Section 2. Immediate and Short Term improvements should be designed to serve ARC C-II aircraft, with consideration for possible future expansion to serve ARC C-III aircraft.
- ▶ The forecast critical aircraft is potentially a range of ARC C-III business jets and turboprops. Activity by these types may potentially increase significantly in the

Section approved by PAC 03/17/98

turboprops. Activity by these types may potentially increase significantly in the future, and may include significant activity by aircraft with takeoff weights of up to 60,000 pounds.

The following narrative contains a discussion of each recommended item of development.

The discussion of each element includes recommendations for improvements to meet the Short Term (2001-2005), and the Ultimate (2006-2018) demand. Recommendations for action in the Immediate Term (1998-2000) are included when a deficiency has been defined which requires immediate correction for reasons of safety, or when a feature was found to be not able to fulfill its design function at the present levels of demand.

Summary tables for recommended Immediate, Short Term and Ultimate development are included at the end of this section.

PRIMARY RUNWAY REQUIREMENTS

Runway 11-29 is the designated Primary Runway for the Winslow-Lindbergh Regional Airport. It has a total surveyed pavement length of 7,497.50 feet, with a 385' displaced threshold on the southeast end (Rwy 29) and a 399' clearway/stopway area on the northwest end (Rwy 11). The pavement width is 150 feet.

The displaced threshold is useable for takeoffs, but not for landing operations, on Runway 29. It is considered as useable pavement for both takeoff and landing operations on Runway 11.

The clearway/stopway is available only for use for takeoff or landing on Runway 29. It is not considered as useable pavement for either takeoff or landing operations on Runway 11.

According to FAA Advisory Circular AC 150/5300-13 Airport Design, a runway's "Declared Distances" are the distances that the airport owner declares available for an aircraft's takeoff and landing operations.

The following is a tabulation of the current Takeoff Distance Available (TODA), Landing Distance Available (LDA), and the Accelerate-Stop Distance Available (ASDA) for Runway 11-29:

Existing Declared Distances for Runway 11-29
Winslow-Lindbergh Regional Airport

Total Pavement Length - Runway 11-29 7,498'

Runway 11:

Takeoff Distance Available (TODA) 7,099'
Landing Distance Available (LDA) 7,099'
Accelerate-Stop Distance Available (ASDA) 7,099'

Runway 29:

Takeoff Distance Available (TODA) 7,498'
Landing Distance Available (LDA) 7,113'
Accelerate-Stop Distance Available (ASDA) 7,498'

The FAA's AC 150/5325-4A, Runway Length Requirements for Airport Design recommends the following runway lengths for an airport at an altitude of 4,940' MSL, with a mean daily maximum temperature of 94° Fahrenheit:

FAA AC 150/5325-4A Primary Runway Length Recommendations
for Winslow-Lindbergh Regional Airport

Small airplanes (12,500 pounds or less):

with approach speeds of less than 30 knots 450 feet
with approach speeds of less than 50 knots 1,190 feet

Small airplanes with less than 10 passenger seats:

75 percent of these small airplanes 4,660 feet
95 percent of these small airplanes 6,210 feet
100 percent of these small airplanes 6,410 feet
Small airplanes with 10 or more passenger seats 6,410 feet

Large airplanes of 60,000 pounds or less:

75 percent of these large airplanes at 60% useful load 7,410 feet
75 percent of these large airplanes at 90% useful load 9,220 feet
100 percent of these large airplanes at 60% useful load 11,620 feet
100 percent of these large airplanes at 90% useful load 11,620 feet

In determining the critical aircraft fleet that might use the Winslow Airport after improvements are made, the approximate takeoff runway requirements were calculated for several ARC B-I, B-II, B-III, C-I, C-II and C-III propeller and jet aircraft types (see Section 2, pages 2-25 through 2-28). These listings indicate that a 10,300' long runway would be required to accommodate all of the selected aircraft in all listed loadings and configurations. However, the majority of the listed aircraft could be accommodated by the currently available Runway 29 takeoff length of 7,498'.

According to the last officially approved Airport Layout Plan, the current runway pavement design strength is for aircraft of 60,000 pounds with single-wheel landing gear (SWG). The runway is used infrequently by heavier aircraft than this at the present time, most notably the U.S. Forest Service fire retardant aircraft. These operations are by modified Douglas DC-6/Lockheed P-3 Orion class ARC C-III aircraft with takeoff weights of up to 135,000 pounds. The use of the airport by these aircraft has averaged only 278 operations per year over the past 10 years, with no noticeable damage to the runway pavements.

The present runway pavement appears to be adequate for the current use, and the general pavement condition has been rated as Good (see Section 1). However, future increases in activity by larger business or air carrier aircraft, or significant change in U.S.F.S. operations, may dictate a pavement strength upgrade and/or runway extension.

Immediate Requirements:

Runway 11-29's length, condition and pavement strength are adequate for the present use of the airport. No immediate actions are indicated.

Ultimate Requirements:

Runway 11-29 is adequate in terms of length and pavement strength to accommodate the present critical aircraft, but may require upgrade to accommodate increased operations by larger ARC C-III aircraft at some point within the planning period of this study. *The actual magnitude of this increase must be based on the specific requirements of the future critical use.*

Runway 11-29 could be extended approximately 2,100' to the northwest if portions of Industrial Park Road and the existing flood control levee were relocated, and with acquisition of some additional land. The location of Highway 87, two school buildings, and existing residential uses to the southeast will not permit extension to the southeast. In fact, if the Runway 11 instrument approach is upgraded to a "precision" approach, the Runway 29 threshold would require relocation 515 feet to the northwest in order to keep the Head Start school outside of the required Runway Protection Zone (see Figures 4-1 and 4-2 at the end of this section).

With the 2,100' extension and the 515' threshold relocation, and with retaining the 900' of existing pavement at the southeast runway end as a Clearway, total Runway

11-29 pavement length would be 9,600 feet. The following is a tabulation of the Declared Distances for Runway 11-29 which would be available with these improvements:

Ultimate Declared Distances for Runway 11-29
Winslow-Lindbergh Regional Airport

Total Pavement Length - Runway 11-29 9,600'

Runway 11:

Takeoff Distance Available (TODA) 9,600'
Landing Distance Available (LDA) 9,600'
Accelerate-Stop Distance Available (ASDA) 9,600'

Runway 29:

Takeoff Distance Available (TODA) 8,700'
Landing Distance Available (LDA) 8,700'
Accelerate-Stop Distance Available (ASDA) 8,700'

Ultimate pavement markings should conform to the requirements for an instrument runway with an approach to visibility minimums of less than ¾ mile.

CROSSWIND
RUNWAY
REQUIREMENTS

The FAA recommends that a secondary (crosswind) runway be developed if the wind coverage on the primary runway is less than 95% (see FAA AC 150/5300-13, Change 4, paragraph 203. b.). A crosswind runway may also be justified based on specific local conditions.

Wind analysis undertaken as a part of this study indicates that the present Primary Runway (11-29) has 96.86% 16-knot coverage, using the Annual/All-Weather data for the 1986-1995 period (see Section 1, Introduction, Background & Inventory). As a matter of fact, the wind analysis indicates that any of the active or abandoned runways' wind coverage would exceed the FAA's 95% threshold.

Based on the annual data, the need for a crosswind runway is not indicated.

However, further analysis indicates that there is a great disparity in wind coverages along the various alignments when the wind is over 16 knots. If a 16-knot crosswind component is accepted, Runway 11-29 has only 33.32% coverage in these higher

wind conditions, as opposed to Runway 4-22 (the present crosswind runway) with 83.35% or the abandoned Runway 17-35 with 67.02%.

The recommendation of this study is to maintain a two-runway system in order to increase the safety of the airport in high wind conditions, and to maintain Runway 4-22 as the crosswind, or secondary, runway.

The existing secondary (or crosswind) runway (4-22) is paved, with a total surveyed pavement length of 7,499.06 feet. Runway 22 has an existing 1,263' long displaced threshold, which is available for takeoff, but not for landing. The entire pavement length is available for takeoff and landing operations on Runway 4.

The following is a tabulation of the current Declared Distances for Runway 4-22:

Existing Declared Distances for Runway 4-22
Winslow-Lindbergh Regional Airport

Total Pavement Length - Runway 4-22 7,499'

Runway 4:

Takeoff Distance Available (TODA) 7,499'
Landing Distance Available (LDA) 7,499'
Accelerate-Stop Distance Available (ASDA) 7,499'

Runway 22:

Takeoff Distance Available (TODA) 7,499'
Landing Distance Available (LDA) 6,236'
Accelerate-Stop Distance Available (ASDA) 7,499'

The runway pavement is 150 feet wide.

The FAA recommends that the length of a crosswind runway should be 80% of the required length of the main runway for the type of aircraft to be served. At the Winslow airport, a crosswind runway which would serve the present use would need to be a minimum of 6,000' long.

If the Primary runway (11-29) is extended in the future to 9,600', the ultimate crosswind runway length required would be between 7,680' (80% of Runway 11's 9,600' TODA) and 6,960' (80% of Runway 29's 8,700' TODA).

Immediate Requirements:

Runway 4-22's length, condition and pavement strength and condition are adequate for the present use of the airport. No immediate actions are indicated.

Ultimate Requirements:

Although Runway 4-22's length will be adequate to serve its role as the secondary runway throughout the planning period, the pavement may require upgrade to accommodate increased operations by heavier ARC C-III aircraft at some point. The actual magnitude of this increase must be based on the specific requirements of the future critical use.

INSTRUMENT
APPROACHES AND
NAVIGATIONAL
AIDS

Federal Aviation Regulations, Part 91.116 indicates that an aircraft attempting to land under IFR conditions, on a published instrument approach procedure, may not descend below the established Minimum Descent Altitude (MDA) unless at least the runway threshold, the threshold markings, the threshold lights, REILs, VASI lights, the runway lights, the touchdown zone lights or markings, or the approach lights are distinctly visible to the pilot.

The Winslow Airport is currently served by one published instrument approach procedure, a VOR or GPS RWY 11 approach. The currently published minimums are listed in the following table. The figures shown for each category of aircraft represent the MDA in feet AGL and visibility in statute miles.

Current Instrument Approach Minimums
Winslow-Lindbergh Regional Airport - 1997
VOR or GPS RWY 11 Approach

	Aircraft Category			
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Straight-In	400-1	400-1	400-1¼	400-1¼
Circling	500-1	500-1	500-1½	600-2

(Procedure is not authorized when the local Winslow altimeter setting is not received)

Consideration should be given to increasing the all-weather utility of the airport by installation of improvements which would allow lower approach minimums at the field.

The current visibility minimums could be improved somewhat by installation of approach lighting aids. A runway with only medium intensity edge lighting (MIRL) is limited to a one mile visibility minimum. Installation of an Omni Directional Approach Lighting system (ODAL) could bring the visibility minimums down to $\frac{3}{4}$ mile, assuming that there are no obstructions to approach surfaces. Medium Intensity Approach Lights with Sequenced Flashers system (MALSF), or Medium Intensity Approach Lights with Runway End Identifier Lights (MALSR) could possibly bring the visibility minimums down to $\frac{3}{4}$ mile, or less.

Immediate Requirements:

The Immediate Term program should include removal of any identified obstructions to FAR Part 77 surfaces, and maintaining the present nonprecision approach procedure to the Primary runway (with visibility minimums of 1 mile, using the existing VOR station and GPS navigation).

Ultimate Requirements:

The Ultimate Term program should include the installation of a MALSR system on the primary runway approach (Runway 11). This will provide a safer environment for arriving aircraft and may bring the visibility minimums down to as low as $\frac{3}{4}$ mile.

Runway 11 should ultimately be equipped with a "precision" instrument approach to lower than $\frac{3}{4}$ mile visibility (a "precision" approach). This may be an Instrument Landing System (ILS), Differential Global Positioning System (DGPS), or a Transponder Landing System (TLS).

Runway 29 should ultimately be equipped with a "non-precision" approach to greater than $\frac{3}{4}$ mile visibility.

Crosswind Runway 4-22 should also be ultimately served by a straight-in instrument approach to greater than $\frac{3}{4}$ mile visibility (a "nonprecision" approach with no glideslope signal). Ultimate pavement markings should conform to these criteria.

TAXIWAYS

The present taxiway system at Winslow includes full parallel taxiways to all active runway ends, as well as connector and access taxiways to serve the various aircraft aprons and movement areas. The current system was apparently designed to accommodate Airplane Design Group II (ADG II) aircraft (those with wingspans up to, but not including 79 feet).

Pavement strengths and condition were found to be adequate for the current use.

An obvious deficiency in the present taxiway system is the bend in the Runway 11-29 parallel taxiway near the existing Terminal Building. This bend was apparently designed to maintain a clear 131' wide taxiway Object Free Area (OFA) for ADG II

aircraft around the Terminal Building.

The centerline offset of the taxiway in relationship to Runway 11-29 is reduced from 325' to 255' in this area. The apparent design criteria for this offset is to serve up to Airplane Reference Code (ARC) B-II types (those with wingspans of less than 79' and approach speeds of less than 121 knots), with a "nonprecision" instrument approach with not lower than $\frac{3}{4}$ mile visibility minimums. The FAA requirement for ARC B-II design is a 240' offset from runway to taxiway centerlines. The requirement for ARC B-III is a 300' offset. Critical use by ARC C-III aircraft would require a 400' offset.

The affected portion of the parallel taxiway should be restricted to use by aircraft of less than 79' wingspan and 121' approach speed (ARC B-II or less), or reconstructed to allow operations by larger aircraft. Several alternatives for addressing this are presented in Section 5 (Development Alternatives).

Immediate Requirements:

The parallel taxiway near the Terminal Building should be restricted to use by aircraft in the ARC B-II class or less. This should be accomplished by the addition of appropriate guidance and informational signage, and optionally, the construction of an additional exit taxiway to allow larger aircraft to return to the runway.

The present strength and condition of the Runway 11-29 and 4-22 parallel taxiways and connector taxiway pavements is adequate for the current use. However, the taxiways adjacent to the Terminal Area Apron are in Poor condition and should be reconstructed concurrent with reconstruction of the terminal area apron pavements. (*Figure 4-3, at the end of this section, illustrates the terminal area pavement reconstruction requirements.*)

Ultimate Requirements:

Parallel and connector taxiways that will be used by ARC C-III aircraft should be widened from their current width of 40 feet to a pavement width of 50 feet. The FAA requires an offset of 400 feet from taxiway to runway centerlines for critical use by Aircraft Approach Category C and above. The current offset for both parallel taxiways is 325 feet. If the additional pavement width is added to one side of the taxiways, the centerline offsets would be increased to 330 feet. Since the offset would still be in noncompliance with FAA criteria, a waiver should be requested from the FAA to approve the adequacy of the present offset for use by ARC C-III aircraft. This waiver would still exclude the "bend" area near the Terminal Building.

If the primary runway is extended, the parallel taxiway will also require extension. This taxiway should be constructed at the standard 400' offset from the runway center line.

AIRPORT
LIGHTING AND
MISCELLANEOUS
REQUIREMENTS

Adequate visual aids are a necessity for safe operation of an all-weather facility such as the Winslow-Lindbergh Regional Airport. Runway and taxiway edge lighting, approach lighting adequate for the published approaches, and security lighting should be addressed in the development schedules.

The existing Medium Intensity Runway Lighting (MIRL) and Taxiway Guidance Signage systems on Runway 11-29 and 4-22 is being reconstructed concurrent with the preparation of this Master Plan.

The existing VASI-2 lights at the approach ends of Runway 11, 29 and 22, and the Runway End Identifier Lights (REIL) on Runways 11 and 22, are in fair condition.

The existing rotating beacon is in good condition, and is adequate for this installation. The existing lighted wind cone is in fair condition.

Apron floodlighting is in good condition.

Parallel and connector taxiways are currently not lighted.

Immediate Requirements:

With the exception of the in-progress reconstruction of the Runway 11-29 and 4-22 edge lighting and Taxiway Guidance Signage systems, no deficiencies requiring immediate action have been identified.

Short Term Requirements:

Medium Intensity Taxiway Lighting (MITL) should be installed along all parallel and connector taxiways.

A PAPI system should also be installed on the Runway 4 approach end.

Ultimate Requirements:

The existing VASI lights on Runways 11, 29 and 22 should ultimately be replaced with Precision Approach Path Indicators (PAPI) on all runway ends.

AIRCRAFT PARKING
AND STORAGE
REQUIREMENTS

The airport currently has a 29,000 square foot Portland Cement Concrete (PCC) surfaced service ramp adjacent to the Terminal Building and T.A.T. Hangar, as well as two asphalt paved aircraft parking aprons.

A 72,000 square foot apron, the Terminal Area Apron, adjacent to the PCC service ramp has provision for 18 aircraft tiedowns. This pavement was rated as being in Good condition, but adjacent connector taxiway pavements and pavement adjacent to the Terminal Building and T.A.T. Hangar were rated as Poor (see Section 1).

A 236,000 square foot apron, the South General Aviation Apron, has 61 additional tiedown spaces (one of which is occupied by a portable "Tee" hangar). Pavement is in Fair condition.

The U.S. Forest Service uses a second 63,700 square foot PCC ramp for its fire retardant aircraft. This apron is in Good condition.

The number of required tiedown spaces for based and transient aircraft use was determined by applying the following criteria (U.S. Forest Service operations are excluded from all calculations and assumptions):

- ▶ Approximately 82% of the total peak daily operations are assumed to be by transient aircraft at the present time (Estimate Actual Current Activity - 1997). A potential short term jump in based aircraft utilization was modeled in the Potential 1997 Activity scenario. This indicates that transient operations would comprise 73% of a greater number of total operations. The Low-Range Forecasts indicate that this will increase to about 82% by 2017. The High-Range Forecasts indicate a decrease to about 70% by the year 2017.
- ▶ Most visiting aircraft will arrive and depart on the same day. The actual number of peak transient aircraft is one-half the transient daily operations.
- ▶ Seventy-five percent of the transient aircraft will be on the ground during the peak period.
- ▶ Ten percent of the based aircraft may also be on the apron temporarily or seasonally.
- ▶ In addition to adequate parking to accommodate transient and based general aviation aircraft, a passenger loading apron and transient parking ramp for commuter airline aircraft and corporate jets may also be required, located adjacent to an airline terminal building and FBO.

The following calculations were made to derive the recommended number of tiedown spaces to be provided on the parking apron in the present and ultimate scenarios.

Where: D = Average Daily Peak Operations.
T = Total daily peak transient operations.
N = Number of required tiedowns for transients.
B = Number of based aircraft.
S = Total number of recommended tiedowns.

For base year Low-Range (Estimated Actual Activity - 1997) condition:

$$\begin{aligned} T &= D (0.82) = 39(0.82) = 31.98 \\ N &= (T/2) 0.75 = (31.98/2)0.75 = 11.99 \\ N &= 12 \\ S &= (0.10 (B)) + N = (0.10 (10)) + 12 = 13 \end{aligned}$$

For base year High-Range (Potential 1997 Activity) condition:

$$\begin{aligned} T &= D (0.73) = 57(0.73) = 41.61 \\ N &= (T/2) 0.75 = (41.61/2)0.75 = 15.60 \\ N &= 16 \\ S &= (0.10 (B)) + N = (0.10 (10)) + 16 = 17 \end{aligned}$$

For Ultimate 2017 condition (Low-Range):

$$\begin{aligned} T &= D (0.82) = 68(0.82) = 55.76 \\ N &= (T/2)0.75 = (55.76/2)0.75 = 20.91 \\ N &= 21 \\ S &= (0.10 (B)) + N = (0.10(17)) + 21 = 22.70 = 23 \end{aligned}$$

For Ultimate 2017 condition (High-Range):

$$\begin{aligned} T &= D (0.70) = 122(0.70) = 85.40 \\ N &= (T/2)0.75 = (85.40/2)0.75 = 32.03 \\ N &= 32 \\ S &= (0.10 (B)) + N = (0.10(24)) + 32 = 34.40 = 34 \end{aligned}$$

It is assumed that most based aircraft owners will prefer to park their aircraft within a hangar, if available at a reasonable cost. For this reason, adequate land area for hangar construction should be provided for all forecast based aircraft through the planning period, assuming an unconstrained High-Range growth environment (24 based aircraft by 2017). These may be constructed as required by private interests upon leased land, or by the City to provide a revenue-producing rental base.

There are currently two existing hangars on the airport property. One of these is a privately owned single-aircraft portable "Tee" hangar that is located on the large aircraft parking apron. The other is the City-owned T.A.T. Hangar, which is used for aircraft storage. It will accommodate five or six aircraft.

Section 1 presents a detailed description of the T.A.T. Hangar and its present

condition, as well as preliminary renovation recommendations.

It is recommended that the T.A.T. Hangar be maintained as an aircraft storage hangar. This building may be eligible for Historic Preservation Fund, ISTFA, and/or Arizona Heritage Fund participation, if restored and maintained in its original 1929 configuration (see Section 3, Historic Preservation).

Immediate Requirements:

The existing aircraft parking aprons will provide adequate tiedown space throughout the planning period of this study. However, the taxiway pavements adjacent to the Terminal Area Apron, Terminal Building and T.A.T. Hangar are in Poor condition and should be reconstructed. It is recommended that the existing Portland Cement Concrete (PCC) service apron, the asphaltic concrete ramp adjacent to the Terminal/T.A.T. Hangar area, and adjacent taxiways in the terminal area be reconstructed. *(Figure 4-3, at the end of this section, illustrates the terminal area pavement reconstruction requirements.)*

Because of the need (expressed by the PAC) to separate the U.S.F.S. operations from light aircraft operations, a new general aviation apron should be developed and a portion of the existing apron removed, to provide a buffer area.

Adequate hangar development land area should be provided by the City on a lease basis to allow the construction of additional private hangars as dictated by demand.

Short Term Requirements:

The South General Aviation Apron pavements were found to be in Fair condition, and should be programmed for rehabilitation in the Short Term.

The T.A.T. Hangar should be renovated as follows (summarized from Section 1):

1. Determine the feasibility of Historic preservation.
2. Replace the metal siding panels as needed with panels manufactured to match the existing design. Replace the existing foundation plate with corrosive resistant steel.
3. Reroof the barrel vaulted hangar portion. Provide core samples at the shop area to ascertain the condition and assembly of the substrate. Reroof the shop area per specifications based upon the core sample test results.
4. Remove and replace, or over-pour the existing concrete floor slab.
5. Rebuild the existing hangar door as needed.
6. Paint the hangar exterior and make repairs to windows as needed.

GENERAL
BUILDING CODE
COMPLIANCE
AND OCCUPANCY
REQUIREMENTS

There are two City-owned buildings within the airport's terminal area, the Terminal Building and the T.A.T. Hangar. Section 1 of this study presents the findings of the site inventory and a detailed evaluation of the condition of each building.

Any new building construction, or additions or major alterations of existing buildings on the airport will be subject to the requirements of the Uniform Building Code (UBC). Commercial uses in new and remodeled buildings will also be subject to the Americans with Disabilities Act (ADA) requirements for handicapped access.

The City will not be required to upgrade the existing buildings to meet the latest building code unless the existing conditions are deemed to be unsafe by the local building official (City Public Works Director or Building Inspector).

TERMINAL
BUILDING
REQUIREMENTS &
RECOMMEND-
ATIONS

Discussion of the Terminal Building requirements in this section of the Master Plan is intended to relate solely to the "raw" building space requirements for the various aviation demands. Section 1 presents a detailed discussion of the current building condition, along with preliminary renovation recommendations. Section 5 presents alternative actions that may be undertaken by the City to provide an adequate building (or buildings) to meet actual demand and to mitigate potential operational conflicts with the Runway 11-29 parallel taxiway.

General Aviation
Terminal
Requirements

The Estimated Peak Hourly Demand, as established in Section 2, was used to arrive at an estimate of the required Terminal Building area for the anticipated general aviation demands through the planning period. A basic criteria of 50 square feet of building space per peak hour passenger or pilot was applied to the assumed rate of 2.5 occupants per peak hour aircraft.

Using this criteria, the estimated minimum Terminal building space for the 1997 time frame (Low-Range projection) is (2.5)(50)(4) or 500 square feet. The High-Range projections for Potential 1997 Activity indicate that (2.5)(50)(6) or 750 square feet may be required with the projected short term increase.

The minimum space required to serve general aviation needs for the year 2017 will be (2.5)(50)(8) or 1,000 square feet in the Low-Range projection, or up to a High-Range figure of (2.5)(50)(14) or 1,750 square feet.

Commuter Airline
Terminal
Requirements

The Terminal Building may also be required to accommodate commuter airline service in the future.

The airline passenger terminal functions as the interface between air and ground

transportation - the airside/landside link in the air travel system. Its primary purpose is to provide for the safe, comfortable and efficient transfer of passengers and baggage to and from aircraft and ground transportation. In order to accomplish this, adequate facilities for passenger ticketing and processing, baggage handling, and public convenience are necessary.

Airline terminal facilities must be able to accommodate compressed peak passenger and baggage conditions, and are usually remotely located from urban centers. This necessitates the need for adequate roadway access and vehicular parking facilities to a greater extent than that which is expected at other types of transportation terminals.

In most cases, terminals at non-hub airports serve charter flights, air taxi, and general aviation activities, in addition to scheduled airlines.

The primary airport terminal occupants are the airlines. However, a number of tenants may also utilize space in the building or building complex. Depending on the size of the airport, these may include food service operators, concessionaires, fixed base operators, rental car services, air taxi, and parking lot operators.

The space requirements to serve the possibility of future commuter airline service were determined by application of the TermFac computer program, which is based on the basic space planning factors contained in FAA Advisory Circular AC 150/5360-9, Planning and Design of Airport Terminals at Non-Hub Locations. The following assumptions were made concerning scheduled airline activity within the planning period:

- ▶ It was assumed that the maximum potential airline traffic at Winslow will consist of two daily flights by a single serving airline, with at least one other stop.
- ▶ One airline parking position will be provided.
- ▶ One secured passenger gate will be provided.
- ▶ Service by Beechcraft 1900's, which will accommodate 19 passengers, was assumed.
- ▶ Based on national averages from the FAA Aviation Forecasts, the assumed average passenger load factor is 50%, with half of these enplaning at Winslow.

Using the above assumptions, the maximum number of enplaned passengers within the planning period is $(19)(2)(0.25)(365) = 3,467.5$, or about 3,500 annual enplanements. Peak hour passengers will probably not exceed those arriving and departing on a single flight, or 10 passengers.

The tabulation below is the output recommendations (including general aviation requirements) from the TermFac program, based on the above assumptions:

Winslow-Lindbergh Regional Airport
NON-HUB AIRLINE TERMINAL BUILDING SPACE REQUIREMENTS

Initial Planning Year	2017
Total Annual Passenger Enplanements	3,500
Peak Hour Originating Passengers	5
Peak Hour Terminating Passengers	5
Peak Hour General Aviation Movements	16
Number of Commuter Gates	1
Number of Serving Airlines	1
Number of Airline Parking Positions	1
<hr/>	
Waiting area/lobby space	79 S.F.
Airline ticket counter length	11 L.F.
Airline ticket counter queue area	22 S.F.
Airline offices/outbound baggage area	887 S.F.
Inbound baggage claim length	11 L.F.
Inbound baggage public area	499 S.F.
Inbound baggage handling area	165 S.F.
Departure holdroom area	1,000 S.F.
Total food and beverage area	556 S.F.
(Restaurant/snack bar area	250 S.F.)
(Kitchen/food preparation area	139 S.F.)
(Cocktail lounge area	139 S.F.)
(Restaurant waiting/stg. area	28 S.F.)
Rental car counter length	11 L.F.
Rental car counter queue area	22 S.F.
Rental car office space	110 S.F.
Number of public telephones	0
Public telephone area	0 S.F.
Public circulation area	1,975 S.F.
Public restroom area	60 S.F.

TOTAL AREA REQUIRED (ULTIMATE) 3,401 S.F.

Reference: AC 150/5360-9

Immediate Requirements:

The existing Terminal Building provides approximately 3,600 square feet of useable space, including about 2,100 square feet in the Terminal itself and the 1,500 square foot restaurant addition. This is adequate to serve the present demand.

Short Term Requirements:

In terms of raw space, the existing Terminal Building would be adequate to meet the immediate, short-term and ultimate general aviation demands, based on the above calculations. However, the building's location will be in conflict with the Runway 11-29 parallel taxiway, if critical use by ARC C-III aircraft is allowed. Section 6, Development Alternatives, presents options for addressing this issue.

The Terminal Building is eligible for inclusion on the State and Federal Register of Historic Places, and application could be made for an Historic Preservation grant to partially fund building restoration (see Section 5, Historic Preservation Alternatives).

The recommended Short Term improvements to the Terminal Building, as presented in Section 1, are summarized as follows:

ADA Compliance:

This building was constructed prior to the ADA and the Uniform Building Code requirements for the physically handicapped, and as a result, is in significant noncompliance. The following items should be addressed during building renovation:

1. Ramp approaches to and from the building entrances.
2. Slope of floors at varying heights which exist at the interior.
3. Door entrances and hardware.
4. Restroom fixtures, hardware, and clearances.
5. Signage
6. Telephone and vending accessibility.
7. Parking and accessible routes.

Preliminary Renovation Recommendations:

1. Determine the feasibility of Historic preservation.

2. Restore and repair the existing exterior of the original structure. Remodel the exterior of the addition (the southern masonry restaurant portion) to harmonize with the adobe style of the original building portion. Omit the wood fascia overhangs. Add stepping parapet walls and viga poles. Stucco the masonry walls to match the existing. Add viga poles and muntin windows.
3. Remodel the interior per a specified program.
4. Update and renovate as necessary for ADA compliance.

Ultimate Requirements:

If commuter airline service is established at Winslow in the future, a separate 3,400 square foot Commuter Airline Terminal should be developed.

**AUTOMOBILE
PARKING AND
ACCESS
REQUIREMENTS**

The Estimated Peak Hourly Demand was also used as a basis to estimate the projected requirements for automobile parking. The criteria used is a factor of 3.25 automobiles per peak hour operation. This factor allows for 2.5 occupants per aircraft operation during the peak hour, plus allowance for airport employees and visitors.

The estimated automobile parking requirements for the present Low-Range time frame is, therefore, (3.25)(4) or approximately 13 spaces. The High-Range estimate for 1997 is (3.25)(6) or about 20 spaces.

The required spaces for the year 2017 condition will range from (3.25)(8) or 26 spaces, to (3.25)(14) or 46 spaces.

Immediate Requirements:

The paved auto parking areas adjacent to the Terminal Building/Restaurant area are adequate to serve the present demand. There is adequate space for about 16 to 20 cars adjacent to the terminal area.

Ultimate Requirements:

The auto parking area(s) should be expanded in the future to accommodate a total of up to 46 cars as dictated by actual demand.

**ROTORCRAFT
FACILITIES**

The forecasts developed in Section 2 indicate that there are about 900-1,100 annual rotorcraft operations at the present time. This activity may increase to nearly 3,300 annual operations within the planning period. A paved, marked, but unlighted helicopter landing area should suffice in the short term to accommodate present demand.

A lighted helipad and short-term helicopter parking area should be included in the ultimate term improvement program. The timing of its construction should be based upon actual demand.

Immediate Requirements:

An area of existing apron should be designated and marked as a rotorcraft Touchdown and Liftoff Area (TLOF). A 48' x 48' TLOF should suffice.

Ultimate Requirements:

A new paved and lighted helipad should be developed as indicated by actual increases in demand. A 48' x 48' paved, lighted and marked Touchdown and Lift-off Area (TLOF), with an 86' x 110' Final Approach and Takeoff Area (FATO) will accommodate virtually all general aviation rotorcraft. A smaller area may be specified based upon actual usage prior to the helipad development.

LAND
ACQUISITIONS

The existing airport property will be adequate for all recommended development through the ultimate planning period with the exception of land acquisitions for the extension of the primary runway in the Ultimate Term.

Extension of Runway 11-29 will require the acquisition of about 26 acres for Runway Protection Zone (RPZ) easements on the southeast end of the runway, as well as acquisition of about 117.5 acres in fee and 38.6 acres in easements to the northwest to encompass the new RPZ and MALSR construction area. Right-of-way for ultimate relocation of Industrial Park Road may also be required (*see Figures 4-1 and 4-2 at the end of this section*).

Short Term Requirements:

It is recommended that all land for the Ultimate Term improvements be acquired as soon as is practical after a determination that the runway extension may actually be required by an increase in demand.

DEVELOPMENT
PHASING PLAN
SUMMARY

The tables on the following pages are a summary of the recommended facility improvements to be constructed within the Immediate, Short Term and Ultimate time frames.

IMMEDIATE TERM DEVELOPMENT PLAN

Winslow-Lindbergh Regional Airport

1998-2000

- Runway 11-29** Remove or mark all obstructions to FAR Part 77 airspace (see Airport Layout Plan).
- Taxiways** Install taxiway guidance and informational signage to restrict use of the Runway 11-29 parallel taxiway to no greater than ARC B-II aircraft in the area of the Terminal Building.
- Reconstruct connector taxiways adjacent to the Terminal Area Apron.
- Aprons** Reconstruct Terminal Area Apron pavements, including the PCC apron and asphaltic concrete ramp adjacent to the Terminal Building and T.A.T. Hangar (remove portion of existing apron to provide separation between U.S.F.S. and general aviation operations - see Airport Layout Plan).
- Construct new general aviation aircraft parking apron (per Airport Layout plan).
- Hangars** Designate adequate hangar development land to allow for the High-Range projected ultimate demand (24 based aircraft).
- Rotorcraft Facilities** Designate a rotorcraft landing area on an existing apron, and mark as a 48' x 48' visual Touchdown and Liftoff Area (TLOF).
-

SHORT TERM DEVELOPMENT PLAN

Winslow-Lindbergh Regional Airport

2001-2005

- Aprons** Rehabilitate the South General Aviation Apron pavements.
- Lighting/Visual Aids** Install Medium Intensity Taxiway Lighting (MITL) on Runway 11-29 and 4-22 parallel taxiways and connector taxiways.
- Install a Precision Approach Path Indicator (PAPI) on the Runway 4 approach end.
- Buildings** Renovate the T.A.T. Hangar under an Historic Preservation Grant.
- Develop a new 1,750 square foot General aviation Terminal Building.
- Designate a site for potential future development of a 3,400 square foot Commuter Airline Terminal.
-

ULTIMATE TERM DEVELOPMENT PLAN
Winslow-Lindbergh Regional Airport
2006-2018
Page I

- Runway 11-29** Extend runway pavement as much as 2,100' to the northwest to serve the actual ultimate critical aircraft. Relocate the Runway 29 threshold 515' to the northwest. *(Requires preparation of an Environmental Assessment).*
- Strengthen pavement to serve the ultimate critical aircraft (assume 60,000 pound SWG ARC C-III).
- Provide an instrument approach to lower than 3/4 mile for Runway 11 (assume a Differential Global Positioning System approach - DGPS), and nonprecision approach to as low as 3/4 mile for Runway 29.
- Mark pavement for "precision" approach.
- Roads** Relocate Industrial Park Road (6,500' of new construction) concurrent with Runway 11-29 extension.
- Runway 4-22** Strengthen pavement to serve the ultimate critical aircraft (assume a critical-design 135,000 pound ARC C-III aircraft).
- Provide a straight-in instrument approach to greater than 3/4 mile visibility.
- Mark pavement for "nonprecision" approach.
-

ULTIMATE TERM DEVELOPMENT PLAN
Winslow-Lindbergh Regional Airport
2006-2018
Page 2

- Taxiways** Widen Runway 11-29 and 4-22 parallel taxiways and connector taxiways from 40 feet to 50 feet to serve ARC C-III aircraft (increase runway/taxiway centerline offset from 325 feet to 330 feet).
- Secure a design waiver from the FAA to allow use of the Runway 11-29 and 4-22 parallel taxiways by ARC C-III aircraft (a 330' offset from the runway centerline would be provided after widening; a 400' offset is required by AC 150/5300-13).
- Extend the Runway 11-29 parallel taxiway to serve the ultimate 2,100' runway extension.
- Lighting/Visual Aids** .. Replace Runway 11, 29 and 22 Visual Approach Slope Indicators (VASI) with Precision Approach Path Indicators (PAPI).
- Install Medium Intensity Approach Lighting System with Runway End Identifier Lights (MALSR) on the new Runway 11 approach and extend MIREL.
- Replace or renovate Runway End Identifier Lights (REIL) on Runway 22.
- Buildings** If commuter airline service is established at Winslow in the future, a separate 3,400 square foot Commuter Airline Terminal should be developed.
- Auto Parking** Expand the automobile parking area to accommodate 46 cars.
- Rotorcraft Facilities** ... Construct a new 48' x 48' paved, lighted and marked Touchdown and Lift-off Area (TLOF), with an 86' x 110' Final Approach and Takeoff Area (FATO).
- Land Acquisitions** Acquire 117.5 acres in fee and 38.6 acres in easements for ultimate extension of Runway 11-29 to the northwest.
- Acquire 26 acres of aviation easements for relocation of the Runway 29 threshold to the northwest.

**MINIMUM DESIGN CRITERIA
WINSLOW-LINDBERGH REGIONAL AIRPORT / ARC C-II
RUNWAY 11-29 (EXISTING)**

Aircraft Approach Category C

Airplane Design Group II (Large Airplanes)

Airplane wingspan	78.99 feet
Primary runway end is nonprecision instrument > 3/4-statute mile	
Other runway end is visual	
Airplane undercarriage width (1.15 x main gear track) . . .	9.00 feet
Airport elevation	4940 feet

RUNWAY AND TAXIWAY WIDTH AND CLEARANCE STANDARD DIMENSIONS

Runway centerline to parallel runway centerline simultaneous operations
when wake turbulence is not treated as a factor:

VFR operations	700 feet
VFR operations with intervening taxiway	700 feet
VFR operations with two intervening taxiways	705 feet
IFR approach and departure with approach to near threshold	2500 feet less
100 ft for each 500 ft of threshold stagger to a minimum of 1000 ft.	

Runway centerline to parallel runway centerline simultaneous operations
when wake turbulence is a factor:

VFR operations	2500 feet
IFR departures	2500 feet
IFR approach and departure with approach to near threshold . .	2500 feet
IFR approach and departure with approach to far threshold	2500 feet plus
100 feet for each 500 feet of threshold stagger.	
IFR approaches	3400 feet

Runway centerline to parallel taxiway/taxilane centerline .	239.4	300 feet
Runway centerline to edge of aircraft parking	400.0	400 feet
Taxiway centerline to parallel taxiway/taxilane centerline	104.8	105 feet
Taxiway centerline to fixed or movable object	65.3	65.5 feet
Taxilane centerline to parallel taxilane centerline	96.9	97 feet
Taxilane centerline to fixed or movable object	57.4	57.5 feet

Runway protection zone at the primary runway end:

Length	1700 feet
Width 200 feet from runway end	500 feet
Width 1900 feet from runway end	1010 feet

Runway protection zone at other runway end:

Length	1000 feet
Width 200 feet from runway end	500 feet
Width 1200 feet from runway end	700 feet

Departure runway protection zone:

Length	1700 feet
Width 200 feet from the far end of TORA	500 feet
Width 1900 feet from the far end of TORA	1010 feet
Runway obstacle free zone (OFZ) width 400.0	400 feet
Runway obstacle free zone length beyond each runway end	200 feet
Approach obstacle free zone width 400.0	400 feet
Approach obstacle free zone length beyond approach light system	200 feet
Approach obstacle free zone slope from 200 feet beyond threshold	50:1
Inner-transitional surface obstacle free zone slope	0:1
Runway width	100 feet
Runway shoulder width	10 feet
Runway blast pad width	120 feet
Runway blast pad length	150 feet
Runway safety area width	400 feet
Runway safety area length beyond each runway end or stopway end, whichever is greater	1000 feet
Runway object free area width	800 feet
Runway object free area length beyond each runway end or stopway end, whichever is greater	1000 feet
Clearway width	500 feet
Stopway width	100 feet
Taxiway width 24.0	35 feet
Taxiway edge safety margin	7.5 feet
Taxiway shoulder width	10 feet
Taxiway safety area width 79.0	79 feet
Taxiway object free area width 130.6	131 feet
Taxilane object free area width 114.8	115 feet
Taxiway wingtip clearance 25.8	26 feet
Taxilane wingtip clearance 17.9	18 feet

Threshold surface at primary runway end:

Distance out from threshold to start of surface	0 feet
Width of surface at start of trapezoidal section	400 feet
Width of surface at end of trapezoidal section	1000 feet
Length of trapezoidal section	1500 feet
Length of rectangular section	8500 feet
Slope of surface	20:1

Threshold surface at other runway end:

Distance out from threshold to start of surface	0 feet
Width of surface at start of trapezoidal section	400 feet
Width of surface at end of trapezoidal section	1000 feet
Length of trapezoidal section	1500 feet
Length of rectangular section	8500 feet
Slope of surface	20:1

MINIMUM DESIGN CRITERIA
WINSLOW-LINDBERGH REGIONAL AIRPORT / ARC C-III
RUNWAY 11-29 (ULTIMATE)

Aircraft Approach Category C

Airplane Design Group III

Airplane wingspan	117.99 feet
Primary runway end is precision instrument 1/2-statute mile or less	
Other runway end is nonprecision instrument > 3/4-statute mile	
Airplane maximum certificated takeoff weight is 150,000 lbs or less	
Airplane wheelbase is less than 60 feet	
Airplane undercarriage width (1.15 x main gear track) . . .	9.00 feet
Airport elevation	4940 feet
Airplane tail height	35.00 feet

RUNWAY AND TAXIWAY WIDTH AND CLEARANCE STANDARD DIMENSIONS

Runway centerline to parallel runway centerline simultaneous operations
when wake turbulence is not treated as a factor:

VFR operations	700 feet
VFR operations with intervening taxiway	800 feet
VFR operations with two intervening taxiways	952 feet
IFR approach and departure with approach to near threshold 2500 feet less 100 ft for each 500 ft of threshold stagger to a minimum of 1000 ft.	

Runway centerline to parallel runway centerline simultaneous operations
when wake turbulence is a factor:

VFR operations	2500 feet
IFR departures	2500 feet
IFR approach and departure with approach to near threshold . .	2500 feet
IFR approach and departure with approach to far threshold 2500 feet plus 100 feet for each 500 feet of threshold stagger.	
IFR approaches	3400 feet

Runway centerline to parallel taxiway/taxilane centerline .	308.9	400 feet
Runway centerline to edge of aircraft parking	400.0	500 feet
Taxiway centerline to parallel taxiway/taxilane centerline	151.6	152 feet
Taxiway centerline to fixed or movable object	92.6	93 feet
Taxilane centerline to parallel taxilane centerline	139.8	140 feet
Taxilane centerline to fixed or movable object	80.8	81 feet

Runway protection zone at the primary runway end:

Length	2500 feet
Width 200 feet from runway end	1000 feet
Width 2700 feet from runway end	1750 feet

Runway protection zone at other runway end:

Length	1700 feet
Width 200 feet from runway end	1000 feet
Width 1900 feet from runway end	1425 feet

Departure runway protection zone:

Length	1700 feet
Width 200 feet from the far end of TORA	500 feet
Width 1900 feet from the far end of TORA	1010 feet
Runway obstacle free zone (OFZ) width 400.0	400 feet
Runway obstacle free zone length beyond each runway end	200 feet
Approach obstacle free zone width 400.0	400 feet
Approach obstacle free zone length beyond approach light system	200 feet
Approach obstacle free zone slope from 200 feet beyond threshold	50:1
Inner-transitional surface obstacle free zone slope	3:1
Runway width	100 feet
Runway shoulder width	20 feet
Runway blast pad width	140 feet
Runway blast pad length	200 feet
Runway safety area width	500 feet
Runway safety area length beyond each runway end	
or stopway end, whichever is greater	1000 feet
Runway object free area width	800 feet
Runway object free area length beyond each runway end	
or stopway end, whichever is greater	1000 feet
Clearway width	500 feet
Stopway width	100 feet
Taxiway width 29.0	50 feet
Taxiway edge safety margin	10 feet
Taxiway shoulder width	20 feet
Taxiway safety area width 118.0	118 feet
Taxiway object free area width 185.2	186 feet
Taxilane object free area width 161.6	162 feet
Taxiway wingtip clearance 33.6	34 feet
Taxilane wingtip clearance 21.8	22 feet

Threshold surface at primary runway end:

Distance out from threshold to start of surface	200 feet
Width of surface at start of trapezoidal section	1000 feet
Width of surface at end of trapezoidal section	4000 feet
Length of trapezoidal section	10000 feet
Length of rectangular section	0 feet
Slope of surface	34:1

Threshold surface at other runway end:

Distance out from threshold to start of surface	0 feet
Width of surface at start of trapezoidal section	400 feet
Width of surface at end of trapezoidal section	1000 feet
Length of trapezoidal section	1500 feet
Length of rectangular section	8500 feet
Slope of surface	20:1

**MINIMUM DESIGN CRITERIA
WINSLOW-LINDBERGH REGIONAL AIRPORT / ARC C-II
RUNWAY 4-22 (EXISTING)**

Aircraft Approach Category C

Airplane Design Group II (Large Airplanes)

Airplane wingspan	78.99 feet
Primary runway end is visual	
Other runway end is visual	
Airplane undercarriage width (1.15 x main gear track) . . .	9.00 feet
Airport elevation	4940 feet

RUNWAY AND TAXIWAY WIDTH AND CLEARANCE STANDARD DIMENSIONS

Runway centerline to parallel runway centerline simultaneous operations
when wake turbulence is not treated as a factor:

VFR operations	700 feet
VFR operations with intervening taxiway	700 feet
VFR operations with two intervening taxiways	705 feet
IFR approach and departure with approach to near threshold	2500 feet less
100 ft for each 500 ft of threshold stagger to a minimum of 1000 ft.	

Runway centerline to parallel runway centerline simultaneous operations
when wake turbulence is a factor:

VFR operations	2500 feet
IFR departures	2500 feet
IFR approach and departure with approach to near threshold . .	2500 feet
IFR approach and departure with approach to far threshold	2500 feet plus
100 feet for each 500 feet of threshold stagger.	
IFR approaches	3400 feet

Runway centerline to parallel taxiway/taxilane centerline .	239.4	300 feet
Runway centerline to edge of aircraft parking	400.0	400 feet
Taxiway centerline to parallel taxiway/taxilane centerline	104.8	105 feet
Taxiway centerline to fixed or movable object	65.3	65.5 feet
Taxilane centerline to parallel taxilane centerline	96.9	97 feet
Taxilane centerline to fixed or movable object	57.4	57.5 feet

Runway protection zone at the primary runway end:

Length	1000 feet
Width 200 feet from runway end	500 feet
Width 1200 feet from runway end	700 feet

Runway protection zone at other runway end:

Length	1000 feet
Width 200 feet from runway end	500 feet
Width 1200 feet from runway end	700 feet

Departure runway protection zone:

Length	1700 feet
Width 200 feet from the far end of TORA	500 feet
Width 1900 feet from the far end of TORA	1010 feet
Runway obstacle free zone (OFZ) width 400.0	400 feet
Runway obstacle free zone length beyond each runway end	200 feet
Approach obstacle free zone width 400.0	400 feet
Approach obstacle free zone length beyond approach light system	200 feet
Approach obstacle free zone slope from 200 feet beyond threshold	50:1
Inner-transitional surface obstacle free zone slope	0:1
Runway width	100 feet
Runway shoulder width	10 feet
Runway blast pad width	120 feet
Runway blast pad length	150 feet
Runway safety area width	400 feet
Runway safety area length beyond each runway end or stopway end, whichever is greater	1000 feet
Runway object free area width	800 feet
Runway object free area length beyond each runway end or stopway end, whichever is greater	1000 feet
Clearway width	500 feet
Stopway width	100 feet
Taxiway width 24.0	35 feet
Taxiway edge safety margin	7.5 feet
Taxiway shoulder width	10 feet
Taxiway safety area width 79.0	79 feet
Taxiway object free area width 130.6	131 feet
Taxilane object free area width 114.8	115 feet
Taxiway wingtip clearance 25.8	26 feet
Taxilane wingtip clearance 17.9	18 feet

Threshold surface at primary runway end:

Distance out from threshold to start of surface	0 feet
Width of surface at start of trapezoidal section	400 feet
Width of surface at end of trapezoidal section	1000 feet
Length of trapezoidal section	1500 feet
Length of rectangular section	8500 feet
Slope of surface	20:1

Threshold surface at other runway end:

Distance out from threshold to start of surface	0 feet
Width of surface at start of trapezoidal section	400 feet
Width of surface at end of trapezoidal section	1000 feet
Length of trapezoidal section	1500 feet
Length of rectangular section	8500 feet
Slope of surface	20:1

MINIMUM DESIGN CRITERIA
WINSLOW-LINDBERGH REGIONAL AIRPORT / ARC C-III
RUNWAY 4-22 (ULTIMATE)

Aircraft Approach Category C

Airplane Design Group III

Airplane wingspan 117.99 feet
 Primary runway end is nonprecision instrument > 3/4-statute mile
 Other runway end is nonprecision instrument > 3/4-statute mile
 Airplane maximum certificated takeoff weight is 150,000 lbs or less
 Airplane wheelbase is less than 60 feet
 Airplane undercarriage width (1.15 x main gear track) . . . 9.00 feet
 Airport elevation 4940 feet

RUNWAY AND TAXIWAY WIDTH AND CLEARANCE STANDARD DIMENSIONS

Airplane Group/ARC

Runway centerline to parallel runway centerline simultaneous operations
 when wake turbulence is not treated as a factor:

VFR operations 700 feet
 VFR operations with intervening taxiway 800 feet
 VFR operations with two intervening taxiways 952 feet
 IFR approach and departure with approach to near threshold 2500 feet less
 100 ft for each 500 ft of threshold stagger to a minimum of 1000 ft.

Runway centerline to parallel runway centerline simultaneous operations
 when wake turbulence is a factor:

VFR operations 2500 feet
 IFR departures 2500 feet
 IFR approach and departure with approach to near threshold . . 2500 feet
 IFR approach and departure with approach to far threshold 2500 feet plus
 100 feet for each 500 feet of threshold stagger.
 IFR approaches 3400 feet

Runway centerline to parallel taxiway/taxilane centerline . 308.9 400 feet
 Runway centerline to edge of aircraft parking 400.0 500 feet
 Taxiway centerline to parallel taxiway/taxilane centerline 151.6 152 feet
 Taxiway centerline to fixed or movable object 92.6 93 feet
 Taxilane centerline to parallel taxilane centerline 139.8 140 feet
 Taxilane centerline to fixed or movable object 80.8 81 feet

Runway protection zone at the primary runway end:

Length 1700 feet
 Width 200 feet from runway end 500 feet
 Width 1900 feet from runway end 1010 feet

Runway protection zone at other runway end:

Length 1700 feet
 Width 200 feet from runway end 500 feet
 Width 1900 feet from runway end 1010 feet

Departure runway protection zone:

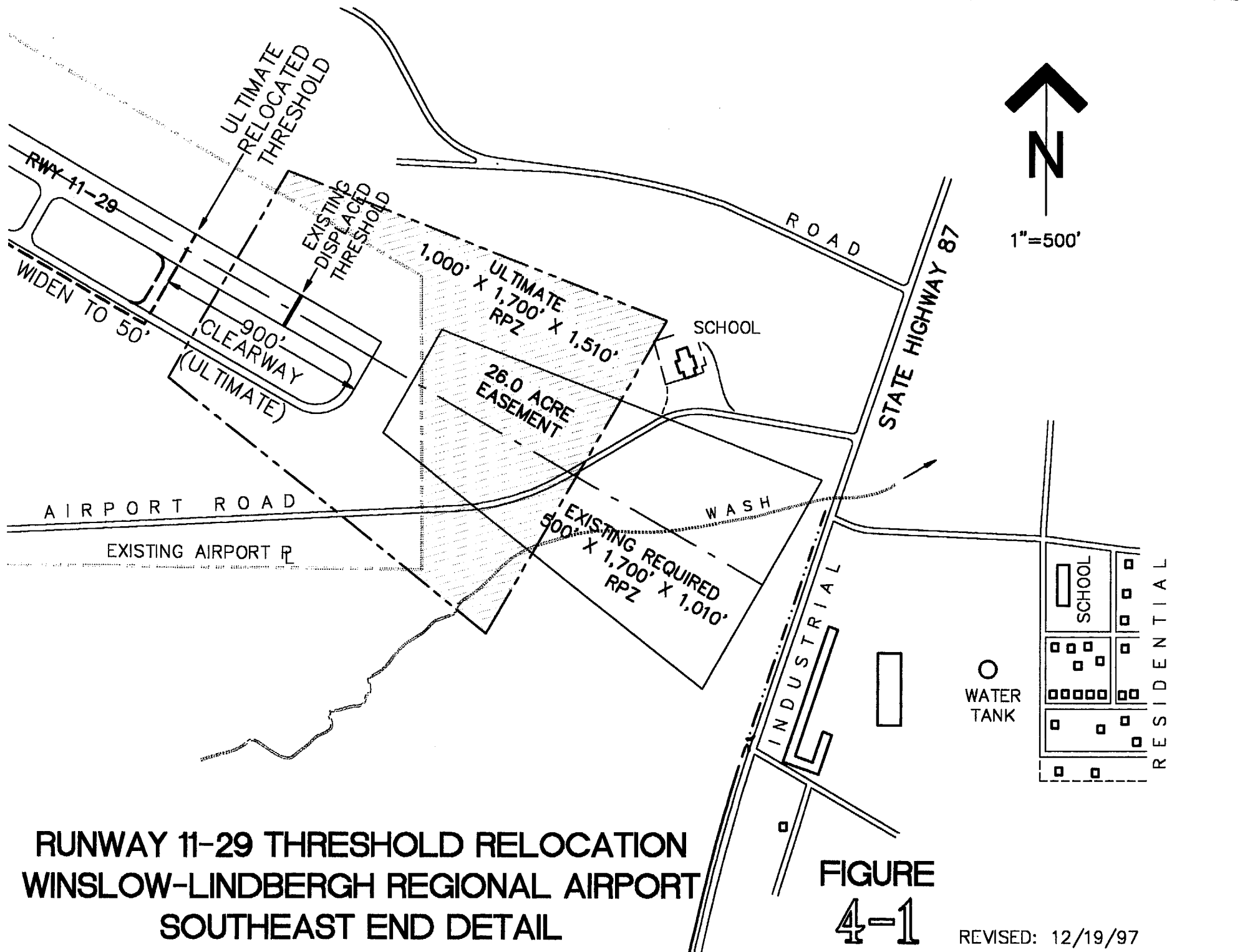
Length	1700 feet
Width 200 feet from the far end of TORA	500 feet
Width 1900 feet from the far end of TORA	1010 feet
Runway obstacle free zone (OFZ) width 400.0	400 feet
Runway obstacle free zone length beyond each runway end	200 feet
Approach obstacle free zone width 400.0	400 feet
Approach obstacle free zone length beyond approach light system	200 feet
Approach obstacle free zone slope from 200 feet beyond threshold	50:1
Inner-transitional surface obstacle free zone slope	0:1
Runway width	100 feet
Runway shoulder width	20 feet
Runway blast pad width	140 feet
Runway blast pad length	200 feet
Runway safety area width	500 feet
Runway safety area length beyond each runway end or stopway end, whichever is greater	1000 feet
Runway object free area width	800 feet
Runway object free area length beyond each runway end or stopway end, whichever is greater	1000 feet
Clearway width	500 feet
Stopway width	100 feet
Taxiway width 29.0	50 feet
Taxiway edge safety margin	10 feet
Taxiway shoulder width	20 feet
Taxiway safety area width 118.0	118 feet
Taxiway object free area width 185.2	186 feet
Taxilane object free area width 161.6	162 feet
Taxiway wingtip clearance 33.6	34 feet
Taxilane wingtip clearance 21.8	22 feet

Threshold surface at primary runway end:

Distance out from threshold to start of surface	0 feet
Width of surface at start of trapezoidal section	400 feet
Width of surface at end of trapezoidal section	1000 feet
Length of trapezoidal section	1500 feet
Length of rectangular section	8500 feet
Slope of surface	20:1

Threshold surface at other runway end:

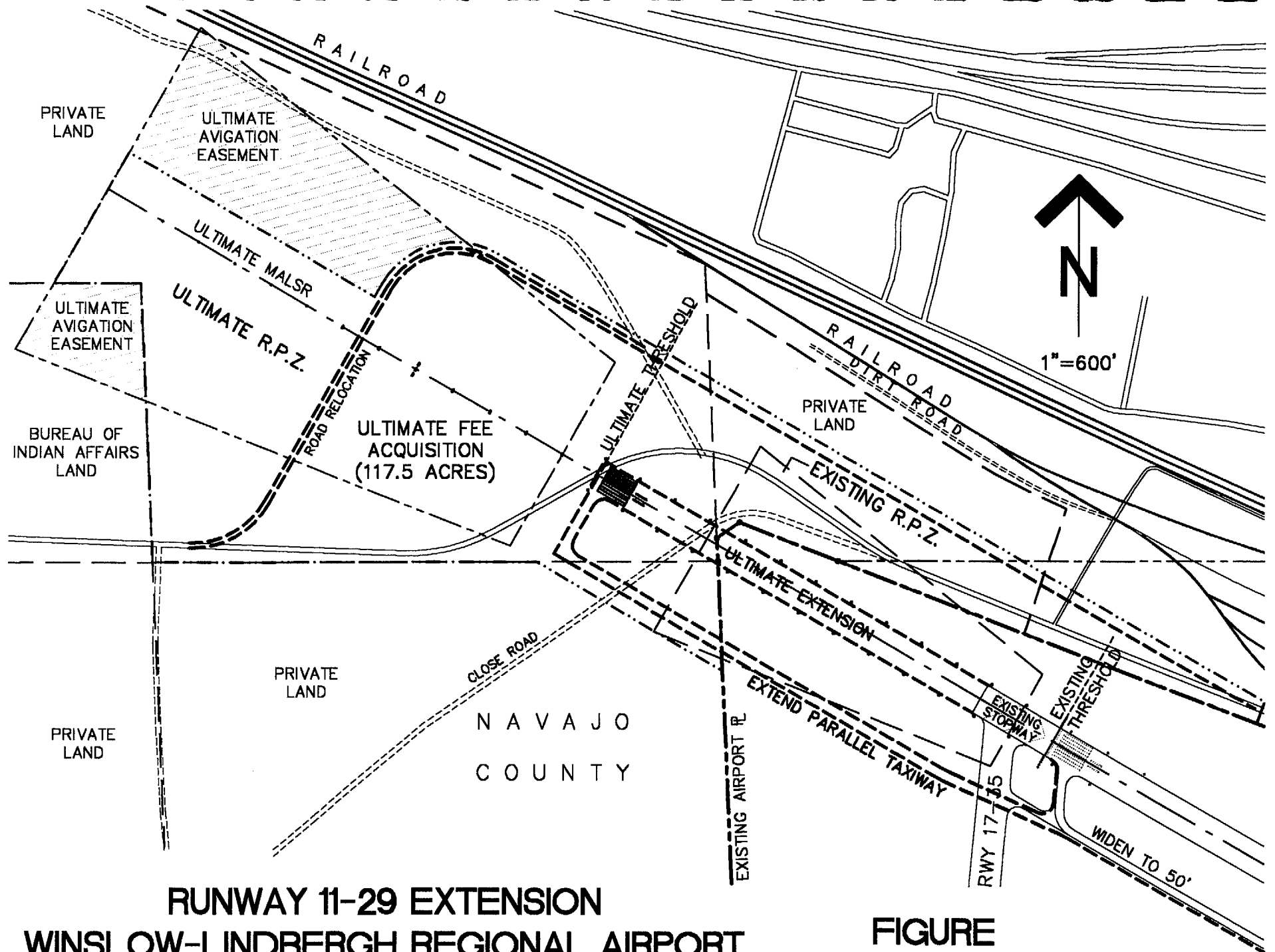
Distance out from threshold to start of surface	0 feet
Width of surface at start of trapezoidal section	400 feet
Width of surface at end of trapezoidal section	1000 feet
Length of trapezoidal section	1500 feet
Length of rectangular section	8500 feet
Slope of surface	20:1



**RUNWAY 11-29 THRESHOLD RELOCATION
WINSLOW-LINDBERGH REGIONAL AIRPORT
SOUTHEAST END DETAIL**

**FIGURE
4-1**

REVISED: 12/19/97

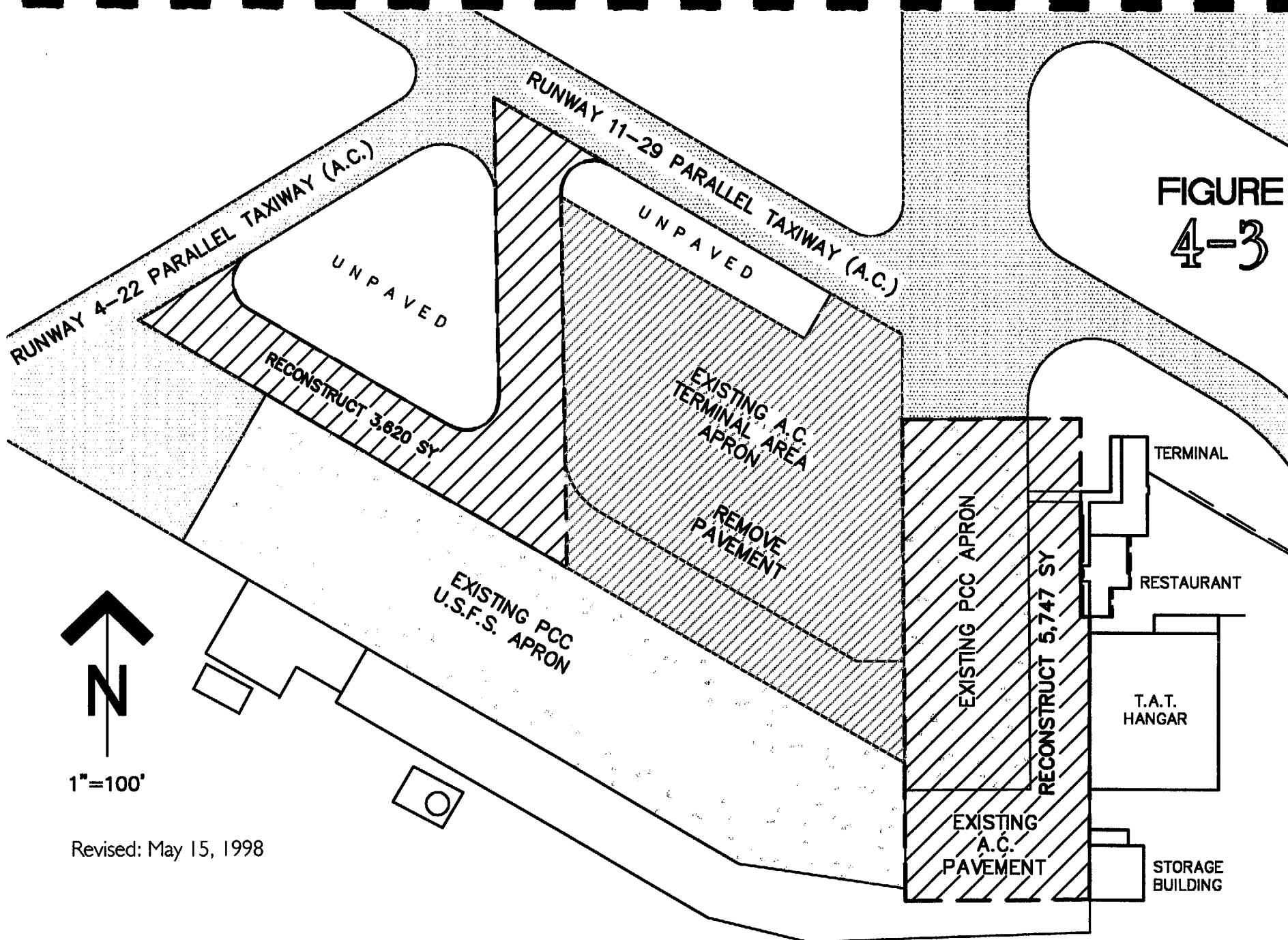


**RUNWAY 11-29 EXTENSION
WINSLOW-LINDBERGH REGIONAL AIRPORT
NORTHWEST END DETAIL**

**FIGURE
4-2**

REVISED: 02/26/98

FIGURE
4-3



N
1"=100'

Revised: May 15, 1998

WINSLOW-LINDBERGH REGIONAL AIRPORT IMMEDIATE TERM TERMINAL AREA PAVEMENT RECONSTRUCTION